Name:- Chuku Daniel Chizenum
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DEPT:- Petroleum Engineering
ENG 224 Classwork 2

A) Discuss the application development following the software development cycle.

Conceptualization
The project to create a software detect temperature and moisture content of the soil, Determine a suitable time interval for irrigation and alert the user in the case at insufficient water in the tank.

Specifications:- The project will need suitable programming software (GUI) recorded values of optimum range of temperature and moisture content. It would also require a password system restricting access.

Design:- The designing of the program will require HTML and C++ for password system.

Implementation:
- The structure of the application will be created using HTML.
- The design layout will be created using C++.
- The password system will be made with C++

Testing and Debbuging
Testing and debugging will be undertaken throughout the implementation process. A final Test will also be carried on the finished product.

Release of the Software

The date of release of the software is dated as 17th May 2020 but could change in regards to changes in the development cycle

Hardware features

- Using commercially available SKYE temperature probes which have an accuracy of 0.1°C. It is placed deep into the soil in order to take a more accurate reading and connected to the software system electronically.

The sensor consists of a thermistor made of copper oxide that changes resistance with temperature. The resistance is the read with a modified ohmeter and translated to temperature electronically

- Moisture content is measured using an electronic soil tensiometer which would give an estimate of volumetric water content in the soil. It is placed at root level to get a more accurate reading

- Irrigation system should be put in place to supply water to the field when needed. This is fitted with a tank.

Software features

The need for Graphical user interface, programming software extentions. login file for storing password.

c Algorithm

Step

1 Start

2 Read Password_file

3 Input Password

4 IF Password = = Password_file

Read temperature

Read moisture content

for temperature > 24°C

Output 'start'; ELSE OUTPUT'STOP'

for moisture content < 8.9%

Output 'start'

ELSE

Output 'STOP'

ELSE

Output "wrong password"

5 Read Water_level

6 IF Water_level < 2 gallons

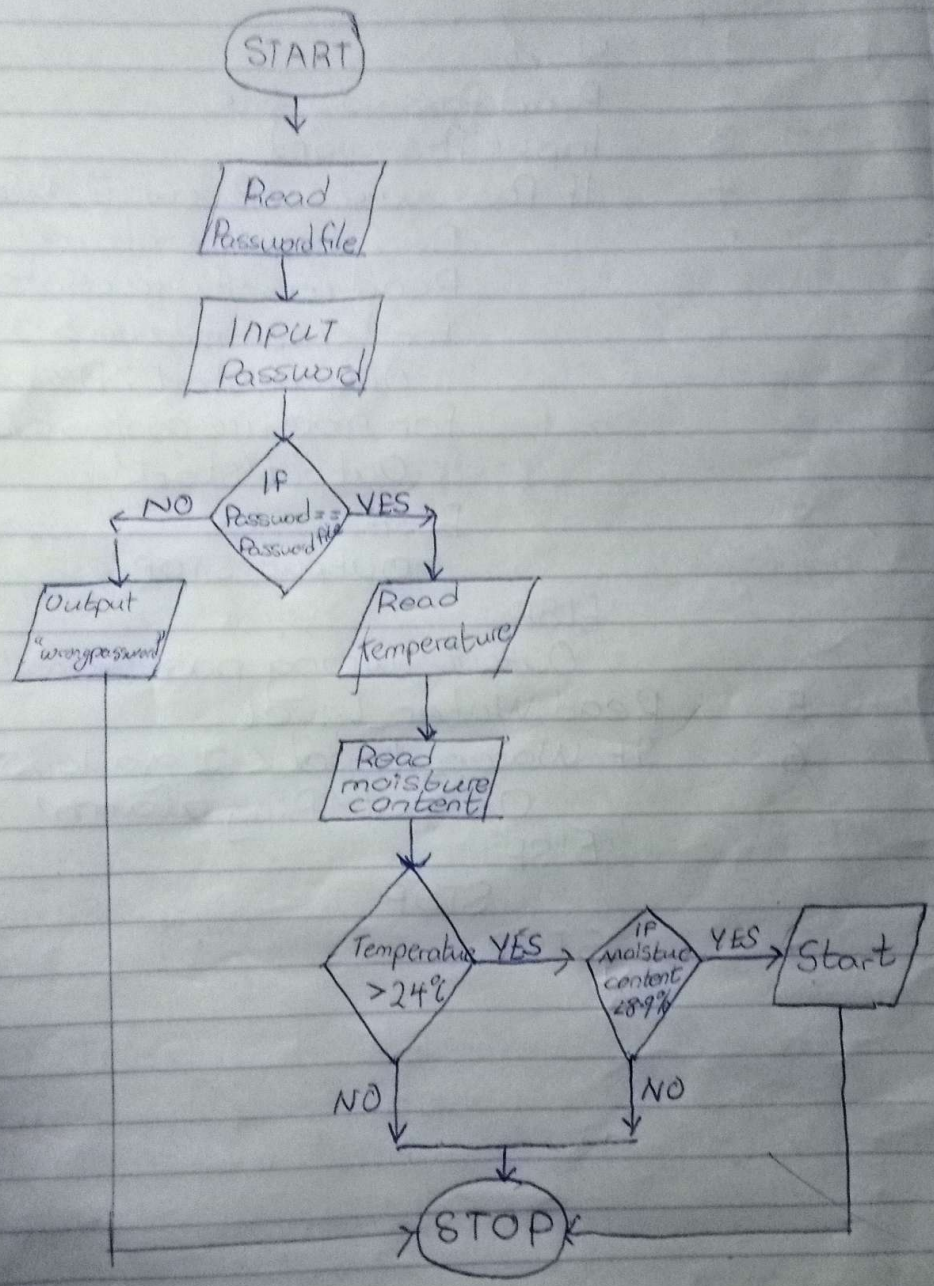
Output 'Ring alarm'

ELSE

STOP

7 STOP

Flowchart


START
Read Password file
INPUT Password
IF Password == Passwod file
NO
YES
Output "wrongpassword"
Read temperature
Read moisture content
Temperature >24°C
YES
IF moisture content <89%
YES
Start
NO
NO
STOP